PATENT



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In Re Application of Huang.

Examiner: UNKNOWN

Serial No.: 09/690,915

Group Art Unit: 2654

Filed: 10/17/2000

For: METHOD AND APPARATUS

FOR HIGH PERFORMANCE LOW BIT-RATE CODING OF UNVOICED SPEECH

RECEIVED

MAR 2 6 2003

Technology Center 2600

LETTER TO OFFICIAL DRAFTSMAN TRANSMITTING FORMAL DRAWINGS

Asst. Commissioner of Patents Washington, D.C. 20231

Dear Sir:

Enclosed for filing in the subject application are nine (9) sheets of formal drawings.

Dated: March 19, 2003 Respectfully submitted,

By: S.H.

S. Hossain Beladi Attorney for Applicant Registration No. 42,311

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, on:

March 19, 2003

(Date of Deposit) Caprice P. Hall

(Nathe of the Person Making Deposit)

(Signature)

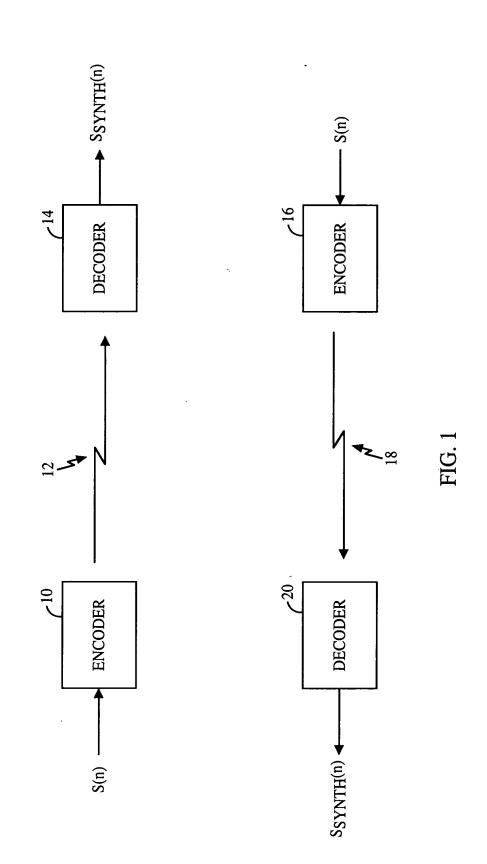
March 19, 2003

(Date of Signature)

QUALCOMM Incorporated Attn: Patent Department 5775 Morehouse Drive San Diego, California 92121-1714 Telephone: (858) 651-4470

Facsimile:

(858) 658-2502





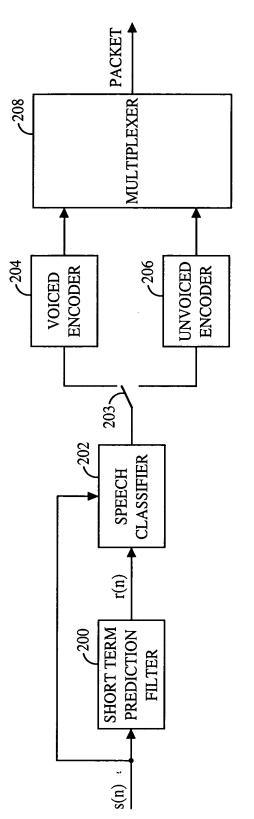
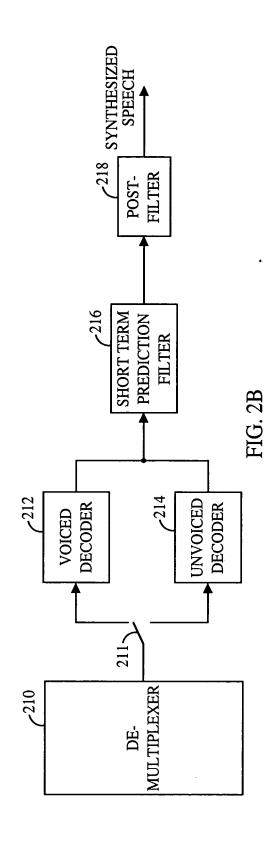


FIG. 2A





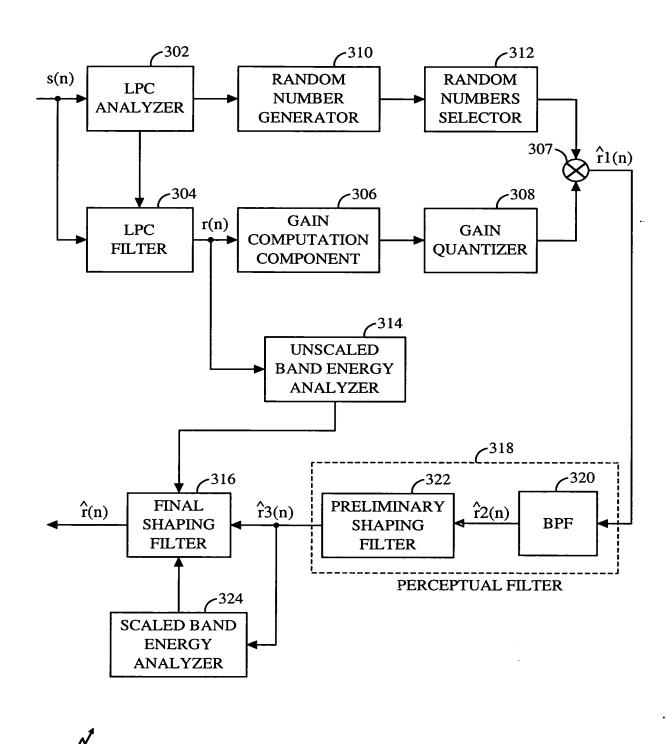


FIG. 3

206



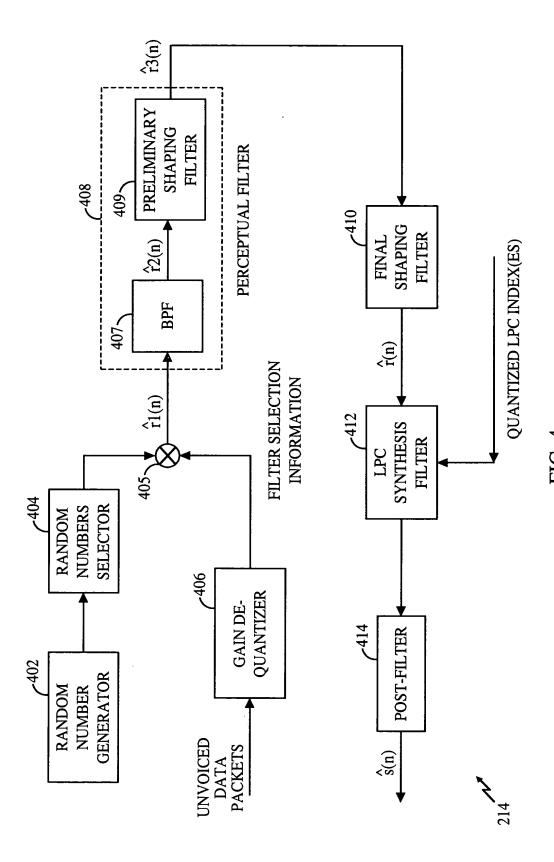


FIG. 4



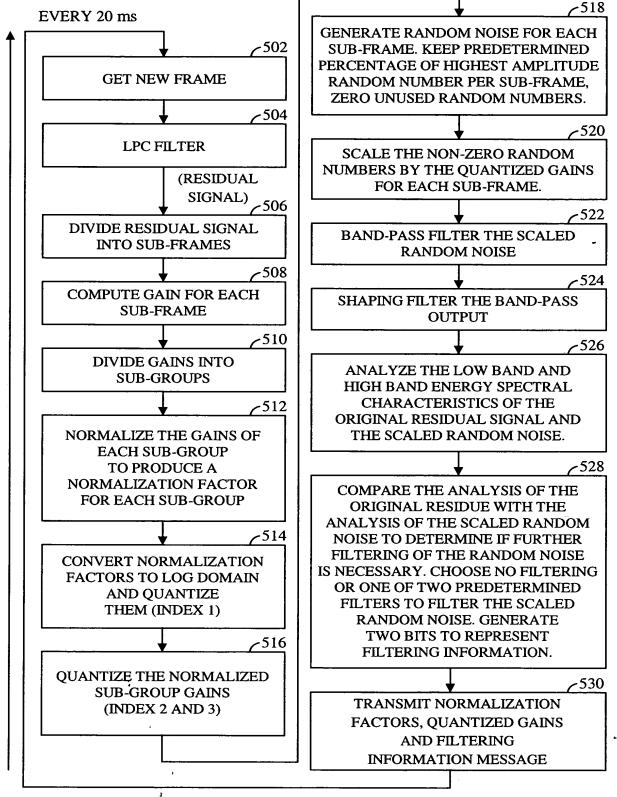


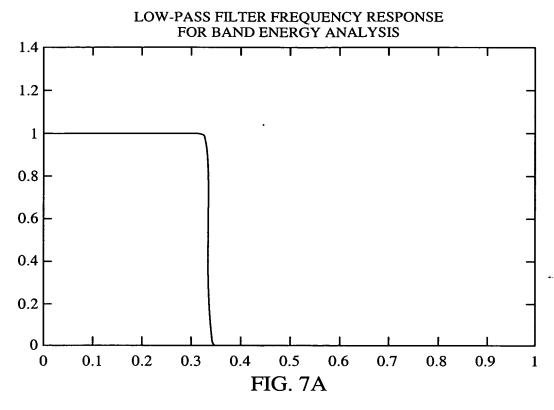
FIG. 5

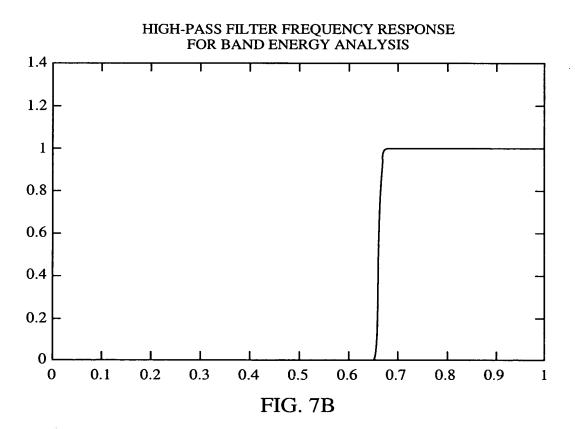


EVERY 20ms -602 **RECEIVE 3 INDEXES** (NORMALIZATION FACTOR, AND 2 SUB-GROUP GAINS) AND 2 FILTERING INFORMATION BITS -604 RECOVER THE NORMALIZATION **FACTORS USING NORMALIZATION** FACTOR INDEX. CONVERT NORMALIZATION FACTORS FROM LOG DOMAIN TO LINEAR DOMAIN. -606 RECOVER GAINS FROM LOOKUP TABLES WITH GAIN INDEXES. SCALE THE RECOVERED GAINS BY THE NORMALIZATION FACTORS TO RECOVER QUANTIZED GAINS OF SUB-GROUPS. -608 GENERATE RANDOM NUMBERS FOR EACH SUB-FRAME. KEEP PREDETERMINED PERCENTAGE OF HIGHEST AMPLITUDE RANDOM NUMBER PER SUB-FRAME, ZERO UNUSED RANDOM NUMBERS. -610SCALE THE NON-ZERO RANDOM NUMBERS BY THE QUANTIZED GAINS FOR EACH SUB-FRAME. -612 BAND-PASS FILTER THE SCALED **RANDOM NOISE** -614 SHAPING FILTER THE BAND-PASS OUTPUT -616 USE 2 FILTERING INFORMATION BITS TO DETERMINE IF FURTHER FILTERING OF THE RANDOM NOISE IS NECESSARY. EITHER NO FILTERING OR ONE OF THE TWO PREDETERMINED FILTERS IS CHOSEN TO FILTER THE RANDOM NOISE AS DETERMINED BY FILTERING INFORMATION BITS

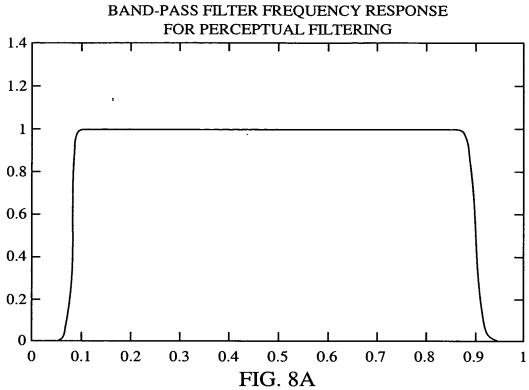
FIG. 6

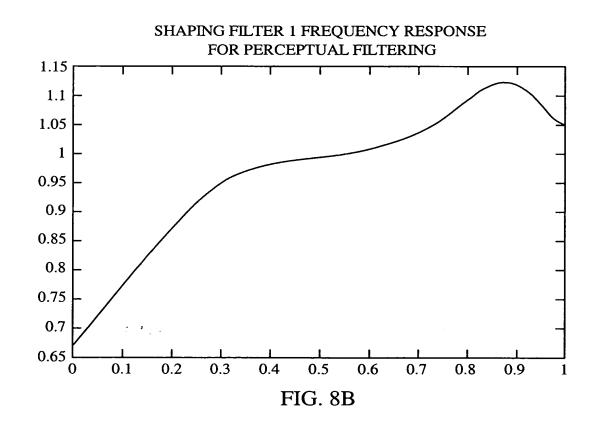














SHAPING FILTER 2 FREQUENCY RESPONSE FOR PERCEPTUAL FILTERING 1.6 1.4 1.2 1 0.8 0.6 0.4 0.2 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 FIG. 8C

